

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



Applicant:)

E.M. Even et al)

) *Art Unit:* 1725

) *Application No.:* 10/651,678

) *Confirmation No:* 9311

) *Examiner:* Heinrich, S.

) *Filed:* 08/29/2003

***Title:* LASER SHOCK PEENING TARGET**

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES
APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with 37 CFR 41.37, applicants hereby submit this Appeal Brief and request that the decision of the examiner dated 03/03/2006 finally rejecting claims 1-21 be reversed and that these claims be allowed.

PATENT
GE131915

REAL PARTY IN INTEREST

The real party in interest is the assignee, General Electric Company.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims 1-24 stand pending in the application.

Claims 22-24 stand withdrawn.

Claims 1-21 stand finally rejected and are the subject
of this Appeal Brief.

STATUS OF AMENDMENTS

There is no amendment filed subsequent to the final rejection.

BACKGROUND

Laser Shock Peening (LSP) is an esoteric manufacturing process that uses the high energy of an industrial laser beam to burn an ablative coating on a metal workpiece within a confinement layer such as water to cause an instantaneous explosion, and the corresponding introduction of plastic deformation in the workpiece surface for introducing a residual compressive stress, which, in turn, increases the strength of the workpiece.

The LSP process becomes more difficult when the laser beam is split into two opposite beams that strike opposite surfaces of the workpiece for particular advantage. Since the main beam from the laser generator is split in two, its two components simultaneously impact the opposite sides of the workpiece. However, the two split beams require precise alignment with the workpiece to ensure that the simultaneous impact occurs at oppositely aligned spots on the workpiece for increasing efficiency of operation.

Further increasing the complexity of the LSP process are workpieces having complex shape and limited accessibility for the laser beam. For example, the airfoil commonly found in gas turbine engines in the compressor or turbine sections thereof has a concave pressure side and an opposite convex suction side joined together at chordally opposite leading and trailing edges, and extending in radial span from a root to a tip. At the root is a platform which defines the inner flow boundary for the airfoil, and an integral dovetail may extend below the platform for removably mounting the airfoil blade into the corresponding slot of a supporting rotor.

The airfoils typically twist from root to tip, and may be integrally formed with a supporting rotor in a unitary or one-piece blisk assembly. In an exemplary compressor blisk, the full row of airfoils extends radially outwardly from the supporting rotor with a relatively close spacing around the circumference thereof, with the individual airfoils nesting between the next adjacent airfoils. The adjacent airfoils in a blisk therefore prevent the use of laser beams aligned

oppositely about 180 degrees apart due to the blocking effect thereof.

The LSP process necessarily begins with an alignment procedure to ensure that the two opposite laser beams are aligned with the opposite sides at the same location of an individual airfoil. The airfoil itself is suitably mounted in a fixture which is attached to the distal end of a conventional, multiaxis computer numerically controlled (CNC) robot or manipulator. The manipulator includes a computer controller which is suitably programmed in software for controlling the desired movement of the workpiece airfoil relative to the stationary laser and the beams emitted therefrom. In this way, the workpiece is precisely moved in three-dimensional space for traversing the laser beams in a predetermined path over the surface of the airfoil to effect complete laser shock peening thereof, which is simultaneous for both sides of the airfoil.

A conventional alignment process includes a conventional alignment fixture in the form of a rectangular beam having a transverse through hole in the distal end thereof. Two annular cover plates are mounted in the common hole through opposite sides of the fixture, with each plate including a center aperture transversely aligned with the opposite aperture. The two plates have corresponding internal circular seats which adjoin each other along the longitudinal center plane of the fixture, and support two target sheets trapped inside the through hole.

The fixture may then be attached to the distal end of the manipulator which is programmed to position the through hole and the aligned apertures thereat at the focal or intersection point of the opposite laser beams. In this way, the laser beams may be directed through the corresponding opposite apertures in the alignment fixture to mark the target sheets in the alignment procedure. The target sheets may be formed of a suitable material such as photographic or burn paper, which will produce a visible mark when exposed to the laser beam, typically produced by operating the high power LSP laser at a suitably low power setting.

The corresponding burn marks on the target sheets may then be examined and measured for any misalignment therebetween. The two laser beams should be aligned within a few mils of each other, and any measured discrepancy thereof may be suitably adjusted by adjusting the alignment of the laser beams using the conventional mirror adjustments found therein.

Since the twisting airfoils found in a blisk typically prevent the use of laser beams aligned oppositely about 180 degrees apart due to the blocking effect of closely adjacent airfoils, the beams must be differently aligned, and the alignment process becomes more complex.

Since the conventional alignment fixture in the form of the rectangular beam has a small but substantial thickness, and the target apertures in the distal end thereof extend transversely through the fixture, the fixture itself introduces self-obstruction with the oblique laser beams particularly at small or acute included angles therebetween.

In order to effectively use the conventional alignment fixture with the oblique laser beams, one of the two cover plates is removed for removing the self-blocking effect thereof, and the target sheets are simply taped into the exposed through hole against the remaining cover plate. The so-modified alignment fixture is then conventionally used in the alignment procedure, with the oblique laser beams having elliptical projections on the target sheets due to the relative inclination therewith.

The elliptical laser beam projections increase the difficulty of aligning the opposite beams, and the alignment process requires iteration by replacing the marked target sheets with clean sheets again taped into the fixture hole. However, taping and untaping of the target sheets lacks accuracy or repeatability of location and further complicates the alignment procedure.

The alignment procedure for the oblique laser beams can therefore require up to about a half a day which is a substantial expenditure of time, which is typically repeated each and every day of the laser shock peening process for

PATENT
GE131915

ensuring accuracy thereof. The alignment procedure therefore increases the overall time for laser shock peening the multitude of workpieces, and correspondingly increases the cost of manufacture.

These considerable problems are solved by the unique laser target described in the subject specification.

SUMMARY OF CLAIMED SUBJECT MATTER

Independent claims 1 & 11 recite a laser target 26 comprising a shank 28 having an integral first wedge 30 converging from a step 34 to a distal end of the wedge; a complementary second wedge 32 fixedly mounted on the step 34 and converging with the first wedge; and the first and second wedges 30,32 having respective target apertures 38 aligned with each other transversely therethrough.

These features are illustrated in figures 3 & 4, and disclosed at paras. 36-38, page 7, l. 19, to page 8, l. 5.

Claim 1 additionally recites that the target apertures are oval, and the first and second wedges 30,32 further include respective seats 40 adjoining each other for supporting a target sheet 42 between the target apertures, with the wedges defining a triangle terminating in an apex at distal ends of the wedges; and that the first and second wedges 30,32 further include respective external faces 44 in which the target apertures 38 are mounted flush.

These additional features are illustrated in figures 4 & 5, and disclosed in paras. 39-42, page 8, ll. 6-25.

Dependent claims 2-9 & 12-19 recite additional features of the laser target, as described in detail hereinbelow; and claims 10, 20, & 21 recite the laser target in further combination with the CNC manipulator for LSP.

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Ground (1) - whether claims 1-6, 11-17, and 19-21 are unpatentable under 35 USC 103(a) over AAPA, USP 4967655- Holderegger et al, USP 6200689- Ferrigno et al, and USP 6427995- Steinwall.

Ground (2) - whether claims 7-10 and 18 are unpatentable under 35 USC 103(a) over AAPA, USP 4967655- Holderegger et al, USP 6200689- Ferrigno et al, USP 6427995- Steinwall, and USP 3711712-McLaren.

ARGUMENT

The file wrapper includes a first office action dated 04/26/2005 containing a restriction requirement between the apparatus claims 1-21 and the method of use claims 22-24.

The second office action dated 07/14/2005 made final the restriction requirement, and includes an omnibus rejection of all elected apparatus claims 1-21 under Section 103(a) over USP 6235241- Catt et al, USP 4937421- Ortiz et al, and Ferrigno.

A paper entitled "Defective Office Action" was filed to determine the examiner's failure to initial the Ref. AR photos submitted by the Applicants, but the examiner did not respond.

The examiner was called on 09/07/2005 regarding that paper, and another office action dated 09/15/2005 was made indicating due consideration of Reference AR, which did not change the rejections of record.

On 09/15/2005 an Amendment was filed traversing the office action, and correcting a minor editorial error in claim 7.

On 10/11/2005 another office action was made to supplant the previous rejections found without merit by the examiner, who then presented different and new rejections.

A "Third Response" was filed on 12/16/2005 traversing those new rejections; and leading to the present 3/3/2006 final rejection in which the examiner copies verbatim the rejections of the previous office action.

Applicants traverse both rejections under Section 103(a) for the examiner's failure to comply with applicable MPEP and legal provisions; and the failure to provide evidence to establish even a prima facie showing.

Applicants note, yet again, the substantial breadth of interpretation of Applicants' claims being proffered by the examiner under the new rejections of record, which correspondingly enlarges claim scope in later infringement analysis of the file wrapper.

However, the examiner has yet again failed to afford due

weight to specific features and cooperation of features which distinguish over the applied art; and the examiner has failed to answer the substance of the traverse of the previous rejections, now withdrawn by the examiner on the merits; as well as the substance of the traverse presented in the Third Amendment.

Applicants traverse the omnibus rejections of the various claims under Section 103(a) over AAPA, Holderegger et al, Ferrigno et al, and Steinwall, commonly applied by the examiner.

For the contention of AAPA, the examiner has referenced Applicants' own "Background of the Invention" section, but without any specificity therein. Which part of that section is the examiner intending to use, and how? The examiner has still not answered this question.

The examiner is also trying to apply the "five photos" in Ref. AR of the IDS as part of the AAPA, but has yet again failed to explain which parts thereof are being used in the rejection.

And, in conjunction with these AAPA contentions, the examiner is also attempting to combine therewith three additional references for a combination of FOUR references, which four references are fundamentally different from each other, and have no legal or logical nexus with which to base an obviousness rejection under the stringent requirements of Section 103.

Most importantly, Rule 104 requires thoroughness of examination, completeness in the office action, and the citation of the best references.

Patent Rule 104 is reproduced in part as follows:

(a) Examiner's action.

(1) On taking up an application for examination or a patent in a reexamination proceeding, the examiner shall make a thorough study thereof and shall make a thorough investigation of the available prior art relating to the subject matter of the claimed invention. The examination shall be complete with respect both to compliance of the application or patent under reexamination with the applicable statutes and rules and to the patentability of the invention as claimed, as

well as with respect to matters of form, unless otherwise indicated.

(b) Completeness of examiner's action. The examiner's action will be complete as to all matters
....

(c) Rejection of claims.

(1) If the invention is not considered patentable, or not considered patentable as claimed, the claims, or those considered unpatentable will be rejected.

(2) In rejecting claims for want of novelty or for obviousness, the examiner must cite the best references at his or her command. When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified.

The examiner has no doubt met the requirements of Rule 104, yet was nevertheless unsuccessful in fabricating even a prima facie rejection of the original claims.

Now, the examiner attempts additional rejections in clearly hindsight application of irrelevant references, amounting to nothing more than examiner conjecture without support by any identified evidence, and without complying with the stringent requirements of the MPEP, in an obvious-to-try expedient which not even one skilled in the art could fashion.

If the experienced examiner is not able to present a cogent and definitive basis to reject the claims as being obvious, how would it be possible for one skilled in the art to find the present claims obvious from the irrelevant references being applied?

Note, quite conspicuously, that in the second office action dated 7/14/05, the examiner failed to place his initials on the reference AR listing, which specifically lists the five photos of the conventional rectangular fixture now being applied by the examiner as AAPA.

The paper entitled Defective Office Action was promptly filed to address this apparent oversight by the examiner.

The examiner did not respond to that paper, so this

attorney called the examiner on 7 Sep 2005 to personally bring the matter to his attention.

In response, the examiner prepared another office action dated 09/15/2005.

In that paper, the examiner expressly states that "Attached is a 1449 with the AR reference initialed." "The AR reference has been considered and does not change the rejection."

"Does not change the rejection" the examiner stated, this after having at least twice evaluated the merits of that reference AR under the thoroughness standard of Rule 104.

And, under that thorough review of reference AR the examiner failed to apply that reference in the 7/14/05 office action as being irrelevant or not a best reference.

But now, having withdrawn the previous rejection for lack of merit, the examiner is forced to fabricate yet another rejection, without regard to the requisite whole analysis of the claims being rejected, without regard to the whole of the references being applied, including reference AR, and without regard to the applicable MPEP provisions.

The examiner's earlier considered decision not to apply reference AR due to its lack of teaching, is now bolstered by the previous restriction requirement presented in the first office action dated 04/26/2005.

It is the examiner who first presented the restriction requirement, which has now been made final, in which the examiner holds that not only are the apparatus and method claims patentably distinct inventions, but they are drawn to materially different subjects, which would have different search classifications,

The examiner has updated his search for the present office action in a belated attempt to uncover any reference from any class which might contain specific features recited in the claims.

This is clearly evident of the power of modern computer searching without regard to the classification system in the PTO, in which clearly nonanalogous references have been found, and continue to be applied by the examiner without

regard to applicable case law.

The scope of the prior art may be determined from applying *In re Wood and Eversole*, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA, 1979):

The determination that a reference is from a nonanalogous art is therefore twofold. First, we decide if the reference is within the field of the inventor's endeavor. If it is not, we proceed to determine whether the reference is reasonably pertinent to the particular problem with which the inventor was involved.

While Ferrigno relates to laser shock peening, it addresses different problems, and lacks any teaching relevant to initial alignment procedures of the two laser beams 102.

Holderegger is clearly nonanalogous art, and the examiner has not shown otherwise in the continued rush to reject the claims without identifying those claims in particular or meeting the stringent requirements of the MPEP.

Applicants' field of endeavor is laser shock peening as expressly stated in para. 1, for example, as previously emphasized. The examiner has not traversed this.

Holderegger expressly states at col. 1 that "The invention relates to an apparatus for screen printing," which is clearly not the same field of endeavor as laser shock peening, nor is it in a related search class.

Applicants' stated problems include the alignment of opposing laser beams for laser shock peening.

Col. 1 of Holderegger discloses quite different problems including the small printing limitation and screen deformation. Clearly these problems are neither related to Applicants' express problems, or to any problems in the other references which the examiner now attempts to apply.

Holderegger is therefore nonanalogous art, and the examiner cannot show otherwise, and has not.

Indeed, the examiner has failed in toto in the final office action to address this fundamental issue, and for this fundamental reason alone all the rejections of record lack merit and should be reversed.

The field of endeavor in Steinwall is "machining

operation" having no relevancy to laser shock peening, and is found in a different search class.

The problem in Steinwall is the need for a "quick-change vise jaw... to hold an odd shaped work piece," yet again, having no relevancy to Applicants' problems of laser alignment.

Steinwall is therefore nonanalogous art, and the examiner cannot show otherwise, and has not.

Indeed, the examiner has yet again failed in toto in the final office action to address this fundamental issue, and for this fundamental reason alone all the rejections of record lack merit and should be reversed.

Not only are these references nonanalogous by art, but they are quite irrelevant in subject matter to ref. AR and Ferrigno also being combined therewith. The examiner's mere conjecture of obviousness does not make it so.

Ground 1

Ground (1) - whether claims 1-6, 11-17, and 19-21 are unpatentable under 35 USC 103(a) over AAPA, USP 4967655- Holderegger et al, USP 6200689- Ferrigno et al, and USP 6427995- Steinwall.

Applicants traverse the omnibus rejection of these claims and request reversal of this rejection.

Laser shock peening is highly esoteric and sophisticated, and the examiner's continued failure to uncover even remotely relevant references specific thereto is quite obvious. Without relevant evidence, the examiner is forced to offer mere conjecture and bald generalizations.

MPEP 706.02(j) provides the basic requirements which must be provided by the examiner in establishing prima facie obviousness under 35 U.S.C. 103. Four steps are required of the examiner including:

(A) the relevant teachings of the prior art relied upon, preferably with reference to the relevant column or page number(s) and line number(s) where appropriate,

(B) the difference or differences in the claim over the

applied reference(s),

(C) the proposed modification of the applied reference(s) necessary to arrive at the claimed subject matter, and

(D) an explanation why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification.

To establish a prima facie case of obviousness, three basic criteria must be met.

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.

Second, there must be a reasonable expectation of success.

Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure.

Citing Ex Parte Clapp, the MPEP places the burden of proof on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references."

It is the examiner who must meet this initial burden by applying specific evidence; and clearly the examiner has not met this burden with the unsupported conclusions of obviousness or well known, which fail to meet the stringent "legal motivation" requirements of MPEP ch. 2100.

In re Dembiczak, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999), emphasizes the evidentiary showing required by the USPTO in supporting an obviousness rejection for avoiding impermissible hindsight. The USPTO rejected as obvious

claims for a trash bag colored orange in imitation of a pumpkin and decorative face for Halloween. The USPTO cited many references for creating Jack-O-Lantern bags, including conventional plastic lawn or trash bags. The Federal Circuit reversed the obviousness rejections as hindsight-based, and summarized previous cases:

Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.... [In re Rouffet] "the Board must identify specifically . . . the reasons one of ordinary skill in the art would have been motivated to select the references and combine them." [In re Fritch] examiner can satisfy burden of obviousness in light of combination "only by showing some objective teaching [leading to the combination]." [In re Fine] evidence of teaching or suggestion "essential" to avoid hindsight. [Ashland Oil] district court's conclusion of obviousness was error when it "did not elucidate any factual teachings, suggestions or incentives from this prior art that showed the propriety of combination." [Graham] "strict observance" of factual predicates to obviousness conclusion required. Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability --- the essence of hindsight. [Interconnect Planning Corp.] "The invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time."

We have noted that evidence of a suggestion, teaching, or motivation to combine may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved.... although "the suggestion more often comes from the teachings of the pertinent references...." The range of sources available, however, does not diminish the *REQUIREMENT FOR ACTUAL EVIDENCE. THAT IS, THE SHOWING MUST BE CLEAR AND PARTICULAR....* Broad conclusory statements regarding the teaching of multiple references, standing alone are not "evidence...." In addition to demonstrating the propriety of an obviousness analysis, *PARTICULAR FACTUAL FINDINGS REGARDING THE SUGGESTION, TEACHING, OR MOTIVATION TO COMBINE* serve a number of important purposes, including: (1) clear explication of the position adopted by the Examiner and the Board; (2) identification of the factual disputes, if any, between the applicant and the Board; and (3) facilitation of

review on appeal. Here, however, the Board did not make particular findings regarding the locus of the suggestion, teaching, or motivation to combine the prior art references....

Nowhere does the Board particularly identify any suggestion, teaching, or motivation to combine the children's art references (Holiday and Shapiro) with the conventional trash or lawn bag references, nor does the Board make specific - or even inferential - findings concerning the identification of the relevant art, the nature of the *PROBLEM* to be solved, or any other factual findings that might serve to support a proper obviousness analysis.

To the contrary, the obviousness analysis in the Board's decision is limited to a discussion of the ways that the multiple prior art references *CAN* be combined to read on the claimed invention. For example, the Board... concludes that the *SUBSTITUTION* of orange plastic for the crepe paper of Holiday and the paper bags of Shapiro would be an *OBVIOUS DESIGN CHOICE*... Yet this reference-by-reference, limitation-by-limitation analysis fails to demonstrate *HOW* the Holiday and Shapiro references teach or suggest their combination with the conventional trash or lawn bags to yield the claimed invention. See Rouffet... noting Board's failure to explain, when analyzing the prior art, "what specific understanding or technical principle... would have suggested the combination." Because we do not discern any finding by the Board that there was a suggestion, teaching, or motivation to combine the prior art references cited against the pending claims, the Board's conclusion of obviousness, as a matter of law, cannot stand. [emphasis added]

Fundamental to the examiner's rejection of all claims is his reliance on the AAPA without regard to the whole thereof, or the express problems presented by the present Applicants in the Background section. And, without due regard by the examiner to the specific combinations of features presented in the various claims, the examiner merely generalizes both the claims and the references in a clearly hindsight attempt to reject the claims without specific evidence, specific analysis, or even logic.

CLAIMS 1 & 11

Independent claims 1 & 11 both recite a laser target 26 comprising:

a shank 28 having an integral first wedge 30 converging

from a step 34 to a distal end of the wedge;

a complementary second wedge 32 fixedly mounted on the step 34 and converging with the first wedge; and

the first and second wedges 30,32 having respective target apertures 38 aligned with each other transversely therethrough

Neither AAPA, Holderegger, Ferrigno, nor Steinwall disclose or suggest any relevant laser target, which requires the examiner to recharacterize the express claim language as a mere "clamp," in clear error, not supported by the examiner by any MPEP or case law provision.

Indeed, in the examiner's remarks presented on page 4 of the final office action, the examiner even more generally recharacterizes the laser target claims by simply stating that "Applicant's [sic] claims are drawn to a work holder" A mere "work holder" the examiner now baldly contends.

This is clear evidence of the continued failure by the examiner to afford any weight, let alone, due weight to express claim language, and is, yet again, another reason, in and of itself to reverse all rejections of record.

The issue of a positive limitation or mere intended use is addressed in *Kropa v. Robie and Mahlman*, 88 USPQ 478, 480-481 (CCPA 1951) as follows:

This court has often had before it the Jepson problem [citation omitted] - whether the preamble to claims in ex parte cases or to the counts in interference cases should be considered as limitations in the claims or counts. Of the thirty-seven cases of this court we have reviewed with respect to this problem it appears that the preamble has been denied the effect of a limitation where the claim or count was drawn to a structure and the portion of the claim following the preamble was a self-contained description of the structure not depending for completeness upon the introductory clause; or where the claim or count was drawn to a product and the introductory clause merely recited a property inherent in the old composition defined by the remaining part of the claim. In those cases, the claim or count apart from the introductory clause completely defined the subject matter, and the preamble merely stated a purpose or intended use of that subject matter. On the other hand, in those ex parte and interferences cases where the preamble to the claim or count was expressly or by necessary implication given

the effect of a limitation, the introductory phrase was deemed essential to point out the invention defined by the claim or counts. In the latter class of cases, the preamble was considered necessary to give life, meaning, and vitality to the claims or counts. Usually, in those cases, there inhered in the article specified in the preamble a problem which transcended that before prior artisans and the solution of which was not conceived by or known to them. The nature of the problem characterized the elements comprising the article, and recited in the body of the claim or count following the introductory clause so, as to distinguish the claim or count over the prior art.

Each claim recites the very special, and very esoteric "laser target," as well disclosed in the specification. The examiner has failed to provide any evidence or legal support to disregard this essential feature of the claims, and his attempt to interpret that laser target as a mere "clamp" or mere "work holder" is conspicuous and without merit.

And, assuming arguendo that no weight should be given to the preamble, the examiner has still failed to establish even a prima facie rejection of the combination of elements as expressly recited in the claims.

The examiner's bald contentions amount to nothing more than the simple recognition that all inventions are virtually mere combinations of old or known elements, and therefore all inventions would be obvious. However, that is not the legal standard.

"Virtually all inventions are necessarily combinations of old elements. The notion, therefore, that combination claims can be declared invalid merely upon finding similar elements in separate prior patents would necessarily destroy virtually all patents and cannot be the law under the statute, §103." *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1 USPQ2d 1953, 1603 (Fed. Cir. 1987), cert. denied, 41 U.S. 1052, 107 S.Ct. 2187 (1987).

Notwithstanding this case law, the examiner has not been able to find all the recited features in the applied references.

Claim 1 recites that the laser target includes the shank 28, first wedge 30 and step 34 in combination with the second wedge 32 converging together, with the wedges 30,32 having

target apertures 38 transversely aligned.

The examiner has failed to explain what AAPA he is intending to apply from the background section and from ref. AR. The examiner is clearly selectively using the Background section, without regard to the problems therein, or the associated teachings.

To be specific, the Background presents at paras. 8-13 the conventional alignment fixture "in the form of a rectangular beam...." That rectangular fixture is shown in various orientations in ref. AR to complement the Background description, and bring this old fixture to the attention of the examiner.

Yet, the examiner having thoroughly examined the specification and ref. AR, first found such conventional practice to not be worthy of any comment, or use in the previous office action. Why?

Why, because that old fixture has a specific rectangular configuration for original use in aligning opposite laser beams 180 degrees apart for single airfoils as disclosed at para. 8.

Para. 14 introduces the additional complexity of the blisk workpiece, and the problems associated with the use of the old fixture in aligning laser beams.

Paras. 15-19 further describe a modified use of the old fixture for the blisk-alignment application, which introduces additional problems resulting in the expenditure of half a day to perform the alignment procedure.

Yet, with these several problems identified by the Applicants, not by the examiner in any reference, the examiner simply contends that that rectangular target would somehow have been modified since "Angled or tapered clamps are well known," citing Holderegger; and also citing Ferrigno for opposing lasers.

The fundamental problems with these mere assertions, is that the examiner has failed to explain how the rectangular target should or would have been modified, and what is the relevant teaching, if any, of Ferrigno being simply listed by the examiner?

Let us start with the old rectangular fixture shown in ref. AR.

So, how should one skilled in the art proceed to modify that fixture in any way, let alone in the manner now recited in Applicants' claims?

Why would one skilled in the art modify that old fixture?

That fixture works quite well as presently designed for single airfoils, but not well enough for the specific blisk problem presented by the present Applicants.

Note, also that the present Applicants have also presented one way to modify the old fixture for use with blisks, but that one way also has problems.

Perhaps, there would be many, many ways to modify that old fixture; but the examiner has the considerable burden to show how and why one skilled in the art would have modified that old fixture, if at all. This, the examiner has not done in his cursory remarks, based on mere examiner conjecture devoid of evidence and devoid of analysis.

The inapplicability of the Ferrigno reference was presented in the last amendment, yet not traversed by the examiner, but, instead, the examiner withdrew the rejection for lack of merit.

Although Ferrigno discloses a laser shock peening apparatus, it is silent on any problems or solutions or alignment fixtures which would be in any way relevant to the present claims or Background section or ref. AR or the other references being applied by the examiner.

Note at the top of page 3 of the office action that the examiner applies Ferrigno solely for simultaneous laser processing, which is clearly irrelevant to any initial alignment process not taught therein.

The examiner attempts to support a rejection, not with evidence, not with explanation, but with mere conjecture; leaving to the Applicants, and now the Board, to speculate on what possibly the examiner intends. The unexplained intention of the examiner is clearly not "clear and convincing."

The examiner attempts to apply Holderegger for "Angled or tapered clamps are well known." So, what is the relevance of this to any one of the claims? And, what does one skilled in the art do with any feature in Holderegger?

Of course, angled or tapered clamps might well be known, but a Section 103 rejection requires more. It requires analysis and evidence and proposed combinations and legal motivation, all lacking in the examiner's mere conclusion of obvious from four different references somehow thrown together in one pot from which springs the specific form of the new laser target found in the various claims.

Where does any of the claims recite a "clamp?"

Where does any claim recite clamping a workpiece in any manner relevant to the references being applied?

The examiner clearly is not interpreting the claims for what they in fact recite, but the examiner loosely generalizes the claims and the features therein in an attempt to force-fit the applied references thereto. This, too, is conspicuous.

Without regard to the specific teachings of Holderegger, the examiner simply opines that "the taper allows for simulation of actual laser processing such as disclosed by Ferrigno et al." What does this mean? And, how is it relevant to the other references being combined, and to which of the many claims being rejected?

Where is this statement disclosed or taught in any of the references? The examiner's statement is a clear hindsight fabrication having no evidentiary basis in any reference.

Holderegger relates to screen printing, and how is that related to any "simulation" in Ferrigno as the examiner proposes? Where is any logic in that?

What does Holderegger disclose and teach?

Look at the multitude of figures 1-13 in Holderegger, and how, possibly, are any of those figures relevant to Ferrigno, or the other references being applied by the examiner?

What should one skilled in the art take from

Holderegger, and what should he leave?

Figures 4 & 5 of Holderegger show specific forms of clamps 9,11 for clamping the opposite edges of the stiffening profiles 2 attached to the flexible screen 1, as shown in Figures 1, 2, and 6.

In claims 1 & 11 the laser target 26 includes the first wedge 30 on the shank 28 converging from the step 34 in a combination clearly not disclosed or suggested by Holderegger.

These claims also recite the complementary second wedge 32 mounted on the step and converging with the first wedge in a combination clearly not disclosed or suggested by Holderegger.

And, these claims also recite respective target apertures 38 in the two wedges, again having no counterpart in Holderegger.

No, the examiner has not recognized these fundamental differences, he has even overlooked them in the rush to reject since he is blinded by the well known use of "Angled or tapered clamps," which despite the specific configuration thereof taught by Holderegger, is clearly insufficient to meet the features expressly recited in the claims.

It is a fundamental tenant of patent law that each and every feature in each and every claim must be evaluated for what it is, how it functions, and how it cooperates in the whole. This the examiner clearly has not done in his cursory remarks, and his failure to identify or afford any weight to the multiple features recited in the claim. Instead, the examiner refers generally to only some features, like "clamps" not recited in the claims, to the exclusion of other features expressly recited in the claims.

The examiner uses Keller at page 5 of the office action as a defense to the requisite analysis, by instead simply stating that "the rejections are based on combinations of references" without specifically identifying what that combination entails.

Of course, an examiner could pick any number of references "in combination" and simply contend that the

claims would have been obvious, as this examiner has simply done; but, this is not permitted by the MPEP or case law, nor the Keller case cited by the examiner.

Note, for example, that figures 1 & 4 of Holderegger expressly show that the index holes 3 in the screen/profiles 1,2 are aligned with the corresponding holes in the jaws 23,25 and therefore would have no utility whatsoever for the laser target, since there would be no target at all in view of those holes 3.

And, just as relevant is the clear fact that those holes 3 are filled with the corresponding index pegs 10, which would further prevent any utility of the "combination" proffered by the examiner in the laser target application of the AAPA reference.

Does not this simple, but significant, difference teach away from even the basic independent claims 1 & 11?

"Among legal standards for determining scope and content of the prior art, for example, are: a prior patent must be considered in its entirety, i.e., as a whole, including portions that would lead away from the invention in suit [citation omitted]." *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1 USPQ2d 1953, 1597 (Fed. Cir. 1987), cert. denied, 41 U.S. 1052, 107 S.Ct. 2187 (1987).

"The well established rule of law is that each prior art reference must be evaluated as an entirety, and that all of the prior art must be evaluated as a whole... [I]nventions have been held to have been nonobvious where neither any reference, considered in its entirety, nor the prior art as a whole, suggested the combination claimed." *Panduit Corp. v. Dennison Mfg. Co.*, 774 F.2d 1082, 227 USPQ 337 (Fed. Cir. 1985), vacated & remanded, *Dennison Mfg. Co. v. Panduit Corp.*, 475 U.S. 809, 106 S.Ct. 1578, 229 USPQ 478 (1986), on remand; 810 F.2d 1561, 1 USPQ2d 1593 (Fed. Cir. 1987), cert. denied, 41 U.S. 1052, 107 S.Ct. 2187 (1987).

The examiner attempts to use mere "broad conclusory statements" such as well known clamps or work holders; and the equally broad reliance on the mere "combination of references" identified with the Keller case as a plain expedient to disregard the whole of those multiple, combined references; and to disregard even those portions of those

combined references that teach away.

The examiner is clearly not allowed to select only so much of any one of the multiple references that might be of help in fabricating a rejection, to the exclusion of other teachings of those very same references which teach away.

The whole analysis requires much more than the selective and vague multiple combinations relied by this examiner to reject all 21 claims.

In addition to the examiner's failure to show how AAPA, Ferrigno, and Holderegger would have been combined, and the failure to identify any evidence therein, the examiner also has applied Steinwall without regard to the whole of any one or more of those references.

The quick change jaw system of Steinwall is so different than AAPA, Ferrigno, and Holderegger, for what reason would one skilled in the art even attempt to consider it in any combination? Why has the examiner chosen to firstly apply Holderegger for its "angled" features; instead of firstly applying Steinwall for what other feature?

The answer is conspicuous; only with the advantage of hindsight can the examiner, and one skilled in the art, even attempt to select naked features from these references using the guide of Applicants' own claims.

To be certain, even a novice artisan could try to combine these diverse references in a myriad of ways, with most or all of those combinations having some (hindsight) explanation, be it "angled," or not-angled, or boxy or heavy or light or small or big, ad infinitum.

The examiner's surgical selection of naked elements from the diverse references lacks the requisite analysis of the whole, analysis of any problem, and fundamentally lacks any evidentiary showing in these references to support any combination thereof, let alone the combination of features expressly recited in the various claims, including the basic features of the laser target as recited in independent claims 1 & 11.

CLAIMS 1, 12, 13

Claims 1, 12, & 13 recite that the first and second wedges 30,32 further include respective seats 40 adjoining each other for supporting a target sheet 42 between the target apertures, with the wedges defining a triangle terminating in an apex at distal ends of the wedges; and that the first and second wedges 30,32 further include respective external faces 44 in which the target apertures 38 are mounted flush.

These features are shown in figures 4 & 5 and disclosed at paras. 39 & 40.

The examiner appears to use Steinwall for "Clamps having indents or seats," yet the teachings of Steinwall are so grossly different than any of the other applied references that there can be no rational basis to combine them in any manner, let alone the specific manners recited in these claims.

To this, the examiner simply argues that Steinwall renders obvious such unexplained features "depending on a known work piece shape," yet this has no logic at all, and disregards the fundamentally different nature of the four disparate references being applied, and is not supported by any identified tenant of case law or the MPEP, see, for example, MPEP 2144.04.

The examiner's attempt to use general legal principles fails fundamentally to comply with any provision of identified case law or MPEP section.

MPEP ch. 2100 contains a significant body of case law, and that case law requires stringent analysis, and a stringent showing of facts before any of that case law can be applied.

The examiner's loose and misdirected contentions of obviousness present a subjective standard of patentability that no patent application could ever pass.

The examiner has clearly failed to comply with MPEP 706.02(j) in addressing each feature of each claim; and must necessarily overlook express claim features in the cursory remarks presented on page 3 of the office action, because the

requisite analysis is not only difficult under the facts of the present claims, but virtually impossible based on the four disparate references which the examiner attempts to apply.

Recall, that neither Holderegger nor Steinwall are analogous art, not only because they lack relevance to laser shock peening or laser targets or laser alignment or Applicants' problems, but also because they lack any relevant structure and teachings which might even be applied to laser targets.

The typical hardware store would most likely contain 1000's of hardware elements of well known design and well known use, and the present examiner would present to us the notion that the present claims would have been obvious for the sole reason that he has applied multiple references, without regard to the relevancy thereof, and since certain elements are well known, then any combination thereof would be obvious, per se, such as selecting common nuts and bolts from the hardware store.

This does not represent modern patent law as well documented in the MPEP, which the examiner has failed to follow.

The examiner's use of Steinwall is particularly determinative of the failure to comply with the MPEP. "Clamps having indents or seats" are well known the examiner contends, citing Steinwall.

But, what does Steinwall disclose? And, what does Steinwall suggest?

Figures 1 & 2 show the common machinist's clamp or vise, referred to in Steinwall as the quick change jaw system 20.

Even the most cursory review of those two figures should support even to the novice examiner that there is no relevance between the features thereof and any of the applied references. None.

Indeed, figure 1 of Steinwall shows a remarkably complex and huge mechanism with rectangular blocks and notches and grooves and other complex and irregular features. How would it even be possible to combine this complex "clamp" with the

different "clamp" of Holderegger in any manner relevant to the simply streamlined laser target recited in Applicants' claims and illustrated in the figures?

Would not the complex clamp of Steinwall and the equally complex clamp of Holderegger be impossible to mount between airfoils in the blisk and have the very problem being solved by the Applicants?

Figures 4 & 5 of Holderegger show another form of clamp having no similarity whatsoever with figures 1 & 2 of Steinwall.

Ferrigno lacks any figure or teaching on laser targets.

And, ref. AR shows the old rectangular laser target, over which the present invention is a significant improvement.

Yet, that rectangular laser target is a custom made, custom configured, and custom used device having no technical or logical nexus with any one of Ferrigno, Steinwall, or Holderegger, and the examiner has not shown otherwise.

Instead, the examiner must rely on mere generalizations as found on page 3, and mere generalizations do not support an obviousness rejection under Section 103.

Indeed, for example only, claim 1 additionally recites that the target apertures 38 are mounted flush in the external faces 44; a feature for which the examiner has afforded no weight.

In ref. AR the apertures are recessed in the external surfaces.

In Ferrigno, no laser target is shown at all.

In Holderegger, there are no relevant target apertures.

And, in Steinwall the "well known ... indents or seats" conspicuously lack any target apertures or relevant flush feature.

CLAIMS 1 & 14

Claims 1 and 14 also recite that the target apertures 38 are oval, with claim 14 adding that the corresponding major axes are normal with the shank step 34.

The oval feature the examiner simply opines is a mere "change in shape for suitable access for an angled beam." However, this is mere conjecture, unsupported by any evidence, or MPEP provision, or case law, and is simply not permitted under modern patent law.

MPEP 2114.04 addresses mere change in shape, and the examiner has failed to apply the facts of the case cited therein.

Claims 1 & 14 do not simply recite an oval aperture, but one in a special combination in a laser target for special function, and corresponding benefits.

The examiner has overlooked the combination recited in the claims, which is much, much more than a mere change in shape or matter of design choice.

The examiner simply opines, without evidence, that "The oval aperture ... would have been ... a change in shape for suitable access for an angled beam." Yet, where is any teaching or problem that the common round hole would be in any way insufficient to receive an angled beam?

If the common round hole were too small for any angled beam, would not simple logic suggest that that common round hole should be made bigger?

How about making that round hole square or rectangular? Why oval?

Oval, the examiner contends only because Applicants' claim oval, and for no other reason supported by any evidence in a reference, or by the requirements of case law.

To the examiner, holes are holes, and are due no weight as being mere changes in shape.

But, under modern patent law holes must be evaluated in the whole, and, indeed, are due fair consideration and due weight.

For example only, the examiner may take Judicial Notice that the gas turbine engine art is extremely crowded in cooling configurations for turbine blades, which blades have many, many, many holes, which holes indeed have resulted in the issuance by the PTO of myriad patents.

Holes are, indeed, quite patentable, and are not mere

change in shape. The case law for change in shape is quite specific, and requires a factual prerequisite which the present examiner has failed to meet, and cannot meet, in his continued rush to reject the claims.

Clearly, the examiner has not been able to apply a reference for an oval aperture; and just as clear none of the four references being applied has any relevant structure or teaching in this regard to support the examiner's bald contention.

This, then, requires the examiner to simply contend that the feature in its combination would have been obvious, in a conspicuous compounding of error after error.

Indeed, the examiner has conveniently overlooked the fundamental reference Holderegger itself in the rush to reject.

As indicated above, the index pins 10 shown in figure 4 destroy any utility of the jaws 23,25 for use in a laser target because they completely block the index holes 3.

And, figure 1 of Holderegger clearly shows that two of those holes 3 are circular and two are oval; and most importantly those oval holes 3 have a fundamentally different orientation than the target apertures recited in claim 14.

Thusly, Holderegger, itself, would clearly teach away from Applicants' claims based on the examiner's proposed combination thereof.

This, the examiner has overlooked in the rush to reject, because it is expedient to simply contend that a hole is a hole, and is not entitled to any weight. But, Applicants' specification clearly explains the benefits of the target apertures, and there location in the wedges, and there preferred orientation for benefits having no counterpart in the basis reference Holderegger being applied by the examiner, and in the other references being "combined" therewith in some unexplained manner.

Not one claim has the examiner allowed. Not one.

Why?

The differences between the present claimed invention and ref. AR and the other references of record could not be

any greater. Yet the examiner repeatedly refuses to allow any claim, based on the mere examiner conjecture of "well known" features, naked features, and therefore "obvious" to one skilled in the art, which person would not have the examiner's experience in patent law in fabricating rejections, yet even with that experience the present rejections are without merit.

CLAIM 2

Claim 2 recites that the aligned target apertures 38 decrease in depth between the shank step 34 and the apex of the wedges 30,32 as shown in figure 4, and for the advantages presented in the specification at para. 43. This combination lacks any evidentiary basis in any of the applied references, and the examiner has not shown otherwise.

The examiner's simple contention that "change in depth of an aperture would have been obvious ... as inherent in a tapered apertured clamp" is bald conjecture having no evidentiary basis in any applied reference, and no identified basis under the MPEP or case law.

The whole analysis requires more, and the examiner has simply failed to meet that requisite analysis, instead choosing the rote expedient of conjecture, without legal support.

The examiner is merely bootstrapping the rejection of claim 2 based on his speculation of using a tapered clamp, when there is no tapered clamp in the applied AAPA, nor any evidence to suggest the need for one.

Assuming arguendo that an aperture could be placed in a tapered clamp, then that aperture could be oriented at any one of 360 degrees of a circle, and could decrease in any number of a myriad manners.

Claim 2 recites specific decrease in depth between the shank step 34 and the wedge apex, clearly overlooked by the examiner in his rush to reject.

And, equally clear is that figure 4 of Holderegger clearly shows the index holes 3 aligned with the pins 10, and

no efficacy to expose the profiles 2 or screen 1 through those holes 3, but, instead, the pegs block access to the profiles and screen.

How then would this combination proposed by the examiner have any utility as the recited laser target? The examiner's proposed combination would therefore destroy the basic function of Holderegger and would render it inoperative for its intended purpose, and this, according to case law, teaches away.

CLAIMS 3 & 15

Claims 3 and 15 recite that the seats 40 include respective recesses 46 aligned with each other around the target apertures to define a pocket for receiving the target sheet 42 as shown in figures 4 & 5 and disclosed at para. 34.

The examiner has failed to address these claims in his rush to reject since neither Holderegger, Ferrigno, nor Steinwall have any relevant features, and lack any nexus with the AAPA being applied by the examiner.

Indeed, Holderegger discloses index pegs 10 in the index holes 3, without apparent recesses or need therefor in the different configuration thereof for a different purpose and having a different function than those found in the AAPA, Ferrigno, and Steinwall being combined therewith by the examiner.

CLAIMS 4 & 16

Claims 4 and 16 recite that the recesses 46 have equal depths for aligning the mating plane of two target sheets 42 with the mating plane of the first and second wedges 30,32, as shown in figure 4 and presented in the specification at para. 44.

Yet again, the examiner has overlooked this claim in the rush to reject, without presenting any evidence or basis to reject this specific combination of features.

Indeed, the examiner's sole contention regarding "change

in depth" applies only to the apertures of claim 2, with the different depths recited in claims 4 & 16 being afforded no weight by the examiner whatsoever.

How does the examiner reconcile the index pegs 10 of Holderegger with any of the other applied references?

Where is any analogous recess 46 in Holderegger for which any depth thereof might have some relevance?

It is quite apparent from figure 4 of Holderegger that the porous printing screen 1 is not mounted in the jaws 23,25 with equal depths, but to the contrary with unequal depths. This, also, the examiner must overlook in the rush to reject.

CLAIMS 5 & 19

Claims 5 and 19 introduce a base plate 36 fixedly joined to a proximal end of the shank 38 as shown in figure 3, and disclosed at para. 37.

Neither Ferrigno, nor Holderegger, nor Steinwall disclose or suggest any relevant feature, and ref. AR lacks any nexus with these references for combination therewith, and the examiner has overlooked these claims.

In view of the disparate and complex configurations of Holderegger and Steinwall for different purposes, the examiner has failed to show how it would even be possible to combine these disparate features, and add some base plate thereto for what reason or benefit?

The recited base plate 36 permits the appropriate mounting of the laser target in the CNC machine for conducting the laser aligning method for which the examiner has afforded no weight.

How could or would the combined contraption of Holderegger be mounted in a blisk as a laser target?

How could or would the combined contraption of Steinwall be mounted in a blisk as a laser target?

The examiner's combination of the diverse references overlooks the fundamentally different configurations and wholes thereof, and simply adds to the mounting error as the references would require more and more distortion to apply to

the various dependent claims as significant features are introduced therein.

The whole analysis mandated by the MPEP and case law therein has, yet again, been overlooked by the examiner in the rush to reject all the claims, without any evidentiary basis, yet based solely on bald examiner conjecture, and hindsight assertion.

CLAIMS 6 & 14

Claims 6 and 14 recite that the oval target apertures 38 include corresponding major axes being normal with the shank step 34 as shown in figures 3-5 and disclosed at para. 42.

The examiner has failed to evaluate this claim in accordance with the stringent requirements of the MPEP, and the examiner's sole contention of "change in shape" is without legal support, and fails to afford any weight to the specific orientation of the oval apertures recited in these claims.

Steinwall lacks any relevant apertures, and the apertures in AAPA are clearly round, and adequate for their intended purposes.

And, Holderegger shows both round holes 3 through the jaws 23,25, plugged by the pegs 10; and figure 1 of Holderegger expressly shows that the oval holes 3 have a fundamentally different orientation than that recited in claims 6 & 14.

The examiner attempts to overlook this teaching of Holderegger, and attempts to use the lack of evidence in the references, and mere assertion to reject these claims in clear violation of the stringent requirements of the MPEP.

CLAIM 17

Claim 17 recites that the second wedge 32 is removably joined to the first wedge 30 by a bolt 48 extending therethrough between the target aperture 38 and the shank 28 as shown in figures 3-5 and disclosed at para. 45.

This claim, the examiner has overlooked in the rush to reject. Neither Ferrigno, nor Holderegger, nor Steinwall disclose or suggest any bolted wedge configuration, and ref. AR lacks any corresponding teaching or suggestion.

Perhaps the examiner's rejection is based on the equally simplistic contention that bolts are well known, and therefore all uses of all bolts would have been obvious. Yet, this is not permitted in modern patent law, nor has the examiner properly supported any rejection of this claim.

Note that figure 4 of Holderegger shows the index pin 10 having no relevance to the bolted configuration of this claim, and the examiner has not shown otherwise.

CLAIM 20

Claim 20 recites the target 26 in a combination apparatus with a computer numerically controlled multiaxis manipulator 10 having a supporting bracket 12 at a distal end thereof fixedly joined to the target base plate 36 as shown in figures 2 & 5 and disclosed at paras. 28 & 48.

For this claim, the examiner simplistically argues that "Ferrigno et al describe computer control and adjustable optics."

But, what does this have to do with the combination expressly recited in claim 20?

Where is any manipulator disclosed in Ferrigno?

The structure in Ferrigno is clearly different than that recited in claim 20, even a cursory review of Applicants' figure 1 and figure 7 of Ferrigno will show this.

The examiner further contends that "The intended use of a computer for particular control does not impart patentability to the apparatus claims." What computer is recited in claim 20?

And, where is the MPEP or case law support for that mere examiner argument?

To the contrary, the MPEP has many sections specifically dealing with computer implemented inventions, and indeed, the computer implementation in an invention "does ... impart

patentability to ... apparatus claims."

The examiner has been confused by the "computer" term recited in claim 20, without regard to the whole of that claim.

Claim 20 does not simply recite a computer, per se; but a CNC multiaxis manipulator 10, which is structure, and, indeed, a highly complex and sophisticated machine also well known in the relevant art. That machine has a supporting bracket 12 fixedly joined to the laser target base plate 36, which is yet even more structure overlooked by the examiner as mere "intended use."

Where is such structure and such combination disclosed or suggested in the four references?

The examiner adds error upon error in his rush to reject the claims, each and every claim, without regard to logic, without regard to the MPEP, and without regard to the applicable case law well presented in MPEP ch. 2100.

Applicants are entitled to an impartial and fair evaluation of each and every one of their many claims, and the production by the examiner of identified evidence in identified references to support the rejections under Section 103 based on legal motivation, and not mere examiner bald assertion, clearly made in hindsight. The various rejections are clearly void ab initio for want of evidence and legal support.

CLAIM 21

Claim 21 further introduces a laser 20; adjustable optics 22 disposed in optical alignment with the laser for directing two converging laser beams 24 therefrom; and that the manipulator 10 is programmed for positioning said target apertures 38 in alignment with respective ones of said two laser beams as shown in figures 2 & 5 and disclosed at paras. 30, 31, and 49.

Yet again, the examiner's use of Ferrigno is irrelevant since that reference lacks corresponding structure; and the examiner's contention of intended use misapplies the many

MPEP provisions on computer implemented inventions.

Claim 21 is a combination claim of structure having disclosed functional capability for which the examiner has clearly failed to afford any weight in his bald contention of "intended use."

Clearly, it is the expedient thing for the examiner to simply argue well known features and obvious to combine, etc, as the present examiner has continually done; but this is not permitted by the MPEP and case law, and the examiner's failure to provide specific evidence, apply that specific evidence to each and every claim in each and every combination thereof is conspicuous.

The requirements of MPEP 706.02(j) and ch. 2100 are intentionally stringent for the very reason of preventing examiners, like the present examiner, from merely arguing the obviousness of claims, as the present examiner continues to do, without evaluating claims in the whole, and the references in the whole.

There can be no doubt that the recited laser target is a distinct improvement over the old laser target; and this is clearly evident over the disparate references uncovered and applied by the examiner.

Legal obviousness is not supported by the apparent simplicity of the recited laser target; and the examiner's far-reaching searching of disparate search classes is evidence of the nonobviousness of the laser target, especially in view of the considerable experience of the examiner in fabricating rejections under Section 103, which are wholly unsupported over the presently applied references.

Holderegger clearly fails to disclose or suggest any laser target, or features useful therein.

Ferrigno clearly fails to disclose or suggest any laser target at all.

And, Steinwall also clearly fails to disclose or suggest any laser target at all.

The old rectangular laser target shown in ref. AR includes the very problems being solved by the new laser target specifically recited in the claims.

The examiner originally evaluated ref. AR under the Rule 104 thoroughness standard, and found that reference lacking as a basis to reject the claims.

But now, the examiner in a conspicuous attempt to force-fit together disparate references must necessarily disregard the express requirements of the MPEP, and instead rely on subjective conjecture without identified evidence and without identified legal motivation.

Without Applicants' claims and disclosure as the guide, the examiner, and one skilled in the art, would have no idea of which features to select from which reference, which features to disregard, and how to combine them, or why.

It quite clear that the examiner must use Applicants' own claims and own disclosure to bootstrap the rejections from disparate references which no person skilled in the art could possibly combine in any manner, let alone any manner relevant to the present claims.

In addition to the verbatim repetition of the previous rejections, the examiner has provided further response at pages 4 & 5 of the final office action, which fail to address in full Applicants' traverse.

The examiner first recharacterizes Applicants' recited laser target as a mere "work holder" when no such term is found in the claims being evaluated by the examiner.

Regarding the Gorman case, the examiner has failed to apply the facts thereof, and has clearly overlooked the "without more" assertion made by the examiner.

Not only is the examiner applying a large number of references, but the examiner is clearly applying nonanalogous references ("more"), not contested by the examiner; applying disparate references having different problems and different structures and different solutions (even "more"); and is applying those multiple references without regard to the stringent requirements of MPEP 706.02(j) and ch. 2100 for legal motivation instead of mere examiner assertion, (even more "more").

Regarding the examiner's defense of hindsight, the examiner has clearly failed to show that he "takes into

account only knowledge which was within the level of ordinary skill ..." since the examiner has failed to specifically identify where that knowledge is expressly found in any of the references being applied.

Note that nowhere in the examiner's brief remarks has the examiner identified any feature from the disparate references by reference number, nor identified any relevant teaching therein by column and line number, nor identified any figure in those various references; but leaves to the speculation of the Applicants, and now also to the Board of Appeals, what "only knowledge" the examiner has in mind.

Nothing in the examiner's mind amounts to evidence, and no assertion made by the examiner is entitled to any weight whatsoever. The MPEP and case law are quite clear that the examiner has the substantial burden of presenting references and specifically identifying evidence therein to support the rejections under Section 103, including evidence supporting legal motivation, not mere hindsight examiner assertion divorced from the claims in specificity and divorced from the teachings of the references themselves, both in particularity and in the whole.

And, the examiner has failed to apply the facts or holding of McLaughlin as the prerequisite to the use thereof under Section 103; which case nevertheless does not give the examiner license to avoid identifying the very "knowledge" which he merely asserts.

Regarding Keller and individual references and combinations thereof; the case law is quite clear that the examiner is duty bound to consider the whole of each and every one of those many references not only for their individual teachings, but for what they would have suggested in combination.

Since the individual references are so different from each other, and have different problems, and different structures, and different functions, and different solutions the examiner's burden, not the Applicants' burden, is made considerably more difficult to reconcile those disparate references and present a clear and convincing basis to reject

the claims.

Quite clear is the fact that the examiner's brief, omnibus rejection of the many claims does not meet the clear and convincing standard, and relying on the simple expedient of Keller without regard to the facts of the present case does not support the many rejections.

The examiner's "Conclusion" presented at page 5 of the office action is additional evidence of the many errors being made by the examiner.

The examiner considers Ausilio and Longobardi as "prior art" but neither reference relates to a laser target, and is more evidence of the examiner's failure to afford due weight to the recited laser targets.

Ausilio discloses a laser welding clamp, having what relevance?

Longobardi discloses a razor blade holder, having what relevance?

It is noted that the examiner made a restriction requirement in the first office action, yet the examiner has failed to show how any of the references uncovered by the examiner are found in the relevant search classes for the "target apparatus and to a computer apparatus and to a laser apparatus" presented as the fundamental basis to support that restriction requirement.

And, the Reed reference discloses a laser alignment tool having no relevance to Applicants recited claims, yet would appear to at least have some nexus or relevance with laser alignment, which relevance is completely lacking in the references uncovered by the examiner from disparate search classes and applied by the examiner to the various claims without regard to the nonanalogous nature thereof.

Accordingly, reversal of the omnibus rejection of claims 1-6, 11-17, and 19-21 under Section 103(a) over AAPA, Holderegger et al, Ferrigno et al, and Steinwall is warranted and is requested.

Ground 2

Ground (2) - whether claims 7-10 and 18 are unpatentable under 35 USC 103(a) over AAPA, USP 4967655- Holderegger et al, USP 6200689- Ferrigno et al, USP 6427995- Steinwall, and USP 3711712-McLaren.

Applicants traverse the rejection of these claims and request reversal of this rejection.

The examiner's need to apply a fifth, irrelevant reference to the previous list of four is evidence in and of itself of the nonobviousness of these claims.

Firstly, neither Holderegger nor Steinwall are analogous art as presented above.

And, McLaren also is nonanalogous art.

McLaren expressly states that the field of endeavor is "radiology," having no relevance with laser shock peening, and the examiner has not shown otherwise.

To be certain, the field of radiology would be just as esoteric and complex as the field of laser shock peening; and those two fields would most certainly be under different subject and search classifications under the USPTO, since they are quite fundamentally different from each other.

However, modern computer searching in the USPTO does not distinguish this difference; that is up to the experience and judgment of the examiner to determine, within the applicable rules of common examination practice.

This examiner has failed to afford any weight to those differences, or to the applicable rules on nonanalogous art in the rush to uncover references wherever they might be found, and combining them for any reason in the hindsight fabrication of rejections.

In the restriction requirement, the examiner limited his search endeavor to a specific area to support the contention of different inventions, yet now for Section 103 rejections the examiner has failed to show how any of the nonanalogous references is relevant to the recited laser target.

At page 4 of the final office action the examiner has lost sight of the large number of references being applied, now five, with the simple expedient that "without more" such a large number does not weigh against obviousness.

This, the examiner opines, with blatant disregard of the fundamentally different nature of the references, clearly from unrelated search classes, and none of the uncovered references having any relevance to the specifically recited laser target.

The problem in McLaren is the detection of a foreign body in the human eye, which, quite plainly, has no relevance to the alignment of laser targets, nor has the examiner shown otherwise.

Instead, the examiner has used the powerful computer searching techniques of the PTO to uncover a reference, any reference, which includes crosshairs; and, now, with the distinct advantage of hindsight simply contends that their use "with the AAPA clamp would have been obvious ... because they provide quick alignment."

Yet, this the examiner opines without recognizing that McLaren is nonanalogous art, and that none of the claims being rejected recites a "clamp" as that device is notoriously well known, even to the examiner based on the references he has uncovered.

CLAIMS 7 & 18

Claims 7 and 18 recite that each of the faces 44 includes a respective crosshair 50 around the target aperture 38 for centering a laser beam therein as shown in figures 3 & 4, and disclosed at para. 47.

Yet there are no apertures disclosed in McLaren around which the crosshairs are located.

Of course, the examiner could also find more references using crosshairs, such as in hunting gun telescopic sights. Yet, the mere recognition that crosshairs themselves are notoriously well known is not sufficient under the MPEP which requires much more in supporting rejections under Section 103.

The examiner overlooks that the "AAPA clamp" illustrated in the rectangular embodiment shown in ref. AR does not need or have crosshairs therein.

The target aperture is itself a target which allows

"quick alignment" of the laser beams.

What problem is the examiner solving with the crosshairs of McLaren?

Why add a superfluous feature to the "AAPA clamp" when it would have no value? "Quick[er] alignment," perhaps?

Why not then add two sets of crosshairs to make the alignment even quicker?

Anyone can simply argue that conventional features could be incorporated into any device for the associated performance thereof, as the examiner now argues, but a Section 103 rejection requires more, which the examiner has failed to provide.

Furthermore, in the rush to reject claims 7-10 and 18, the examiner has conspicuously overlooked the other features recited therein, notwithstanding the crosshairs.

CLAIM 8

Claim 8 recites that the second wedge 32 is removably joined to the first wedge 30 by a pair of bolts 48 extending therethrough between the target aperture 38 and the shank 28.

Claim 8, therefore, like claim 17 addressed above, recites a specific bolted configuration of a specific laser target for specific advantage having no counterpart in the combination of five references being made in hindsight by the examiner.

There is no analogous structure in McLaren, nor in Holderegger, nor in Steinwall, nor in Ferrigno, nor in ref. AR; yet the examiner has overlooked this claim, perhaps because one bolt or two bolts or a myriad of bolts would be well known?

Applicants need not speculate as to the examiner's basis for rejection; the MPEP requires otherwise. The examiner's failure to support this and the other rejections simply makes them void ab initio for want of evidence and want of analysis and want of legal basis under Section 103.

CLAIM 9

Claim 9 introduces a pair of the target sheets 42 mounted in the recesses 46 between the first and second wedges 30,32 as shown in figures 4 & 5 and disclosed at paras. 44-46.

This specific combination has, yet again, been overlooked by the examiner in the rush to reject each and every claim.

No such target sheets are disclosed or suggested in McLaren, or in Holderegger, or in Steinwall, or in Ferrigno.

And, although ref. AR would indeed use target sheets, they are and would be used quite differently as the examiner will recognize upon examining the entirety of the "AAPA" which he cites in the Background section of the present application.

At best, McLaren, Holderegger, Steinwall, and Ferrigno all teach away from the use of any target sheet whatsoever, let alone two target sheets, since those references disclose structures not only different from each other, but different from ref. AR.

It is only the present examiner, with the considerable advantage of hindsight, and with Applicants' specification and claims as the guide who has the present ability to surgically find the disparate references in disparate search classes, and surgically dissect those disparate references to uncover only general features and general teachings thereof to the exclusion of the specific features and specific teachings thereof, and without regard to the whole of those references or the whole of each and every claim now being rejected.

Clearly, this type of examination practice does not support rejections under Section 103. The MPEP is clear in its requirement for evidence, and its requirement to explain how and why one skilled in the art would have found obvious the specific combination of features presented in Applicants' claims.

The target sheets 42 specifically recited in claim 42 enjoy the many advantages disclosed in the specification for accurately and quickly aligning the opposing laser beams, having no counterpart in the disparate references uncovered

by the examiner.

Note that the fundamental reference being applied by the examiner is Holderegger for the specific configuration of the jaws 23,25 for mounting the specific configuration of the porous printing screen 1 shown in figure 4. And, that screen 1 is mounted differently than the pair of target sheets 42 in claim 9 because the two configurations are different in fundamental nature, purpose, and use, which the examiner must necessarily disregard in the rush to reject the claims on mere examiner assertion and generalities.

The examiner has failed to show why Holderegger would or could have been modified to support two screens 1 in the non-explained modification of the AAPA, whatever that entails to the examiner.

And, the examiner must also disregard that the profile/screen 1,2 in Holderegger has the index holes 3 aligned in the jaws 23,25 and therefore fail to expose any part thereof to any laser beam which might be directed through the holes 3.

Indeed, the index pegs 10 expressly found in those holes 3 would render inoperative the Holderegger configuration for any use as a laser target since it would be those pegs 10 that would receive the laser beams, and for what purpose or advantage?

CLAIM 10

Claim 10, like claim 20 addressed above, recites a target 26 in combination with a computer numerically controlled multiaxis manipulator 10 having a supporting bracket 12 at a distal end thereof fixedly joined to the target base plate 36.

The examiner has failed to present any reason to reject claim 10 at page 4 of the office action, and his contentions made regarding claim 20 would be equally defective if applied to claim 10.

None of the references uncovered and applied by the

examiner provides any relevant teaching to combine the specific target 26 with the CNC manipulator 10 recited in claim 10, and the examiner has not provided any evidence whatsoever to the contrary.

Perhaps the examiner intended to simply repeat his (page 3) contention of "intended use of a computer," yet claim 10 does not recite mere intended use, but the specific apparatus combination of laser target attached to the manipulator.

Accordingly, reversal of the rejection of claims 7-10 and 18 under Section 103(a) over AAPA, Holderegger et al, Ferrigno et al, Steinwall, and McLaren is warranted and is requested.

CONCLUSION

The MPEP is clear in its mandate for evidence, analysis, and legal motivation to support rejections under Section 103, and equally clear is the examiner's failure to comply therewith.

Instead, the examiner has repeatedly made mere assertions without any identified evidence to support any modification of the multiple references applied, and without the requisite showing of legal motivation, in contrast with mere hindsight conjecture.

The examiner has failed to address or rebut the nonanalogous nature of the many references, and any belated attempt to do so in the examiner's Answer would be untimely and in violation of Rule 104, and would be conspicuous in yet another attempt to support an insupportable rejection of the claims.

The examiner fundamentally has applied the AAPA not for the whole teaching thereof, but only for what would be helpful and convenient to the examiner. It is the present Applicants who have presented to the examiner in this patent application the previous form of the laser target, the problems therewith, and even a real modification thereof having additional known problems, which problems are solved by the presently recited laser target.

Without Applicants' own specification, without Applicants' own Background description of the previous laser target, and without Applicants' very claims as the guide, the examiner, and one skilled in the art, would have no reason, interest, motive, or basis to modify the previous laser target, or reconstruct it in toto, or modify any one or more of the multiple references uncovered by the examiner in a fishing expedition through the PTO patent library, without regard to the different search fields, and without regard to the original restriction requirement used by the examiner to support an insupportable restriction requirement.

Not only are the large number of references applied by the examiner relevant to the nonobviousness of all claims being rejected, but they are evidence of the great variety in apparatus for which patents are granted for those differences themselves.

To be certain, the present claims recite laser targets having combinations of features fundamentally different than each and every one of the references uncovered by the examiner, yet instead of giving due weight to those differences and those combinations as expressly recited in the claims, the examiner has instead disregarded those differences, and has asserted mere generalities in the drive to maintain the rejections without regard to, and without due rebuttal of, Applicants' traverse.

The claims have not been amended in substance.

The first rejection by the examiner under the thoroughness standard of Rule 104 has been withdrawn as clearly without merit.

And, the second and new rejection of the claims has now been twice repeated by the examiner, verbatim, without due consideration of Applicants' traverse which is further evidence of the examiner's failure to comply with the requisite provisions of the MPEP, including specifically identifying specific evidence in the references, and providing legal motivation as that term of art is well explained in MPEP ch. 2100, in contradistinction with mere examiner argument or assertion, which in and of itself has no

value under Section 103.

The MPEP mandates suitable evidence, and the examiner has failed to provide that evidence.

Yet again, and quite controlling in the present prosecution is the examiner's initial evaluation, at least twice, of the very ref. AR cited by the present Applicants themselves as evidence of the old rectangular laser target, yet that reference was not originally applied by the examiner for any basis to reject the claims, and certainly not considered by the examiner as being the best reference available.

The failure of the examiner to fabricate even a prima facie rejection in the original office action is also conspicuous since the rejections therein have been withdrawn, without the least recognition of the lack of merit thereof, except that "Applicant's arguments ... are moot"

Yet, those arguments are not moot since they show the previous failure by the examiner to provide the requisite evidence and the requisite legal basis to reject the claims.

Those failures continue through the final office action, and are made even more conspicuous because the examiner has been challenged on the requirements of the MPEP, and continues to disregard those requirements.

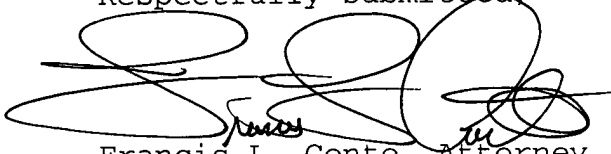
MPEP 706.02(j) has been presented above, and it is not seen how the examiner's rejections presented in the previous office action or the present office action meet those requirements for specificity, evidence, and the clear and convincing showing mandated therein.

The examiner's contentions are conspicuous for the failure to identify each and every claim listed, and the different features recited therein, and the failure to present the requisite analysis therefor. Mere examiner generalizations and conjecture based on well known features, neither supported by evidence nor case law nor the MPEP, do not meet the stringent requirements of Section 103.

For these exemplary reasons, reversal of all the various rejections is warranted, and allowance of all claims 1-21 is warranted and is requested.

And, upon allowance of the apparatus claims 1-21, due examination and allowance of method claims 22-24 is warranted and requested under MPEP 821.04.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Francis L. Conte', is written over a horizontal line.

Date: 26 April 2006

Francis L. Conte, Attorney
Registration No. 29,630

6 Puritan Avenue
Swampscott, MA 01907
Tel: 781-592-9077
Fax: 781-592-4618

Attachments:

1. Claims Appendix
2. Evidence Appendix
3. Related Proceedings Appendix

CLAIMS APPENDIX

Claims on appeal:

1. A laser target comprising:
 - a shank having an integral first wedge converging from a step to a distal end of said wedge;
 - a complementary second wedge fixedly mounted on said step and converging with said first wedge;
 - said first and second wedges having respective oval target apertures aligned with each other transversely therethrough;
 - said first and second wedges further including respective seats adjoining each other for supporting a target sheet between said target apertures, with said wedges defining a triangle terminating in an apex at distal ends of said wedges; and
 - said first and second wedges further including respective external faces in which said target apertures are mounted flush.
2. A target according to claim 1 wherein said aligned target apertures decrease in depth between said shank step and said apex of said wedges.
3. A target according to claim 2 wherein seats include respective recesses aligned with each other around said target apertures to define a pocket for receiving said target sheet.
4. A target according to claim 3 wherein said recesses have equal depths for aligning the mating plane of two target sheets with the mating plane of said first and second wedges.
5. A target according to claim 4 further comprising a base plate fixedly joined to a proximal end of said shank.
6. A target according to claim 5 wherein said oval target apertures include corresponding major axes being normal with said shank step.

7. A target according to claim 6 wherein each of said faces includes a respective crosshair around said target aperture for centering a laser beam therein.

8. A target according to claim 7 wherein said second wedge is removably joined to said first wedge by a pair of bolts extending therethrough between said target aperture and said shank.

9. A target according to claim 8 further comprising a pair of said target sheets mounted in said recesses between said first and second wedges.

10. A target according to claim 9 in a combination apparatus with a computer numerically controlled multiaxis manipulator having a supporting bracket at a distal end thereof fixedly joined to said target base plate.

11. A laser target comprising:

- a shank having an integral first wedge converging from a step to a distal end of said wedge;

- a complementary second wedge fixedly mounted on said step and converging with said first wedge; and

- said first and second wedges having respective target apertures aligned with each other transversely therethrough.

12. A target according to claim 11 wherein said first and second wedges further include respective seats adjoining each other for supporting a target sheet between said target apertures, with said wedges defining a triangle terminating in an apex at distal ends of said wedges.

13. A target according to claim 12 wherein said first and second wedges further include respective external faces in which said target apertures are mounted flush.

14. A target according to claim 13 wherein said target

apertures are oval with corresponding major axes being normal with said shank step.

15. A target according to claim 13 wherein seats include respective recesses aligned with each other around said target apertures to define a pocket for receiving said target sheet.

16. A target according to claim 15 wherein said recesses have equal depths for aligning the mating plane of two target sheets with the mating plane of said first and second wedges.

17. A target according to claim 13 wherein said second wedge is removably joined to said first wedge by a bolt extending therethrough between said target aperture and said shank.

18. A target according to claim 13 wherein each of said faces includes a respective crosshair around said target aperture for centering a laser beam therein.

19. A target according to claim 13 further comprising a base plate fixedly joined to a proximal end of said shank.

20. A target according to claim 19 in a combination apparatus with a computer numerically controlled multiaxis manipulator having a supporting bracket at a distal end thereof fixedly joined to said target base plate.

21. An apparatus according to claim 20 further comprising:

a laser;

adjustable optics disposed in optical alignment with said laser for directing two converging laser beams therefrom; and

said manipulator being programmed for positioning said target apertures in alignment with respective ones of said two laser beams.

EVIDENCE APPENDIX

There is no additional evidence submitted by the Appellants pursuant to 37 CFR 1.130, 1.131, or 1.132, or any other evidence entered by the examiner and relied upon by Appellants, other than the evidence relied upon by the examiner as to the grounds of rejection to be reviewed on appeal.

RELATED PROCEEDINGS APPENDIX

In accordance with 37 CFR 41.37(c)(1)(x), there is no decision rendered by a court or the Board in any proceeding identified pursuant to paragraph 37 CFR 41.37(c)(1)(ii).